

ABSTRACT OF THE DISCLOSURE

A device having redundant circuit elements is provided with programmable fuse elements on the back surface of the chip. Openings are etched through the chip and connect the circuit elements on the front surface to the fuse elements on the back surface. The fuse elements may be arranged in a grid of lines that are connected to the openings and are read by sequentially activating the lines to activate either a row of fuse elements or a column of fuse elements. Alternatively, bonding pads are provided on the back surface of a chip and are connected to the circuit elements on the front surface of the chip through the openings in the chip.